

## REMARKS/ARGUMENTS

Claim 1-33 and 37-40 are pending in the application. The Applicant appreciates that in the Office Action dated as mailed September 21, 2007 the Examiner indicated that claims 4, 5, 10, 19, 27, 37, 38, and 40 are allowed. It is submitted that claims 1-3, 6-9, 11-18, 20-26, 28-33, and 39 are allowable as originally or previously presented and that the application is in condition for allowance.

### *Claim Rejections – 35 USC § 102*

Claims 1 and 11 are rejected under 35 USC § 102(e) as being anticipated by Steere et. al (“Steere”; US 2005/0157904). These claims are allowable for the reasons set forth below.

Steere discloses electro-dynamic loudspeakers that include in one embodiment a magnet 804, ferrofluid 814 disposed on the magnet without being contained and held in position by the magnet, and a diaphragm film 806 with which the ferrofluid 814 is in contact. *See* Steere para. [0054] and FIGS. 8-8B. As set forth in Steere, the “ferrofluid provides a mechanical damper for dampening the resonance frequency of the film 806 . . . .” *See id.*

First, Applicant’s independent claim 1 recites a coupler with rheological material. Ferrofluids, as disclosed in Steere, are different than the rheological material in Applicant’s claim 1. While similar in that they respond physically to a magnetic field (for magneto-rheological material), Steere’s ferrofluids do not become substantially rigid in the presence of a magnetic field, while Applicant’s rheological materials do. They also have a different size of particles. These materials are not interchangeable and are used for different purposes. For example, Steere’s ferrofluid is always compressible and stretchable. *See* Steere para. [0054] and FIGS. 8-8B. Alternatively, in the presence of the magnetic field of Steere, where the ferrofluid is disposed on a magnet, Applicant’s magneto-rheological fluid in place of the ferrofluid would be

substantially rigid or at least partly rigid, and would not be a damper but would transmit energy between the parts.

Second, Applicant's claim 1 recites "a coupler mounted to the transducer and adapted to be attached to the acoustic radiator." The ferrofluid of Steere is neither. Instead, Steere's ferrofluid is uncontained, and is held in place against the magnet by magnetic force only; this is not "mounted." Nor is the ferrofluid "adapted to be attached to the acoustic radiator," in that the ferrofluid merely is in contact with the film, never attached. It is not possible to adapt uncontained ferrofluid to be attached to the film.

In order for a reference to anticipate a claimed invention, the reference must teach each and every element in the precise arrangement set forth in the claim. If the reference fails to teach even one of the claimed features, the reference does not and cannot anticipate the claimed invention. Based upon at least the several structural and functional deficiencies of the disclosure in Steere identified in the preceding remarks, Applicant respectfully requests that the rejection be withdrawn.

### ***Claim Rejections – 35 USC § 103***

Claims 2-3, 6-8, 12, 21-23, 26, and 28-33 are rejected under 35 USC § 103(a) as being unpatentable over Steere in view of Murray (US Patent No. 6,434,237). These claims are allowable for the reasons set forth below.

For at least similar reasons that evidence claim 1 is allowable, independent claims 28 and 29 are allowable. Claims 28 and 29 recite *attaching* the coupler to the acoustic radiator and to the transducer. As discussed above, neither cited reference discloses this, and nor is it possible with the disclosures of either to do so. Claims 28 and 29 are also nonobvious for the following additional reasons.

With respect to claim 28, claim 28 recites a controllable viscosity in response to the presence or absence of an energy field. There must be an energy field (from the magnet) in Steere, or the ferrofluid could be displaced from the magnet. There is never an absence of an energy field. Further, in the Applicant's invention it is desirable for there to be a lack of an energy field as part of the mode of operation, and the rheological material changes from, as recited, substantially flexible to substantially rigid, which the Steere ferrofluid does not do. It would impermissibly change the principle of operation of Steere to modify Steere to include the rheological material of Murray.

With respect to claim 29, the rheological material is recited to become substantially rigid in the presence of an energy field, which Steere's ferrofluid does not do. And contrary to the Steere's ferrofluid, which serves to *dampen* the resonance frequency of the film, claim 29 recites that energy passes from the transducer through the coupler to *excite* bending waves to produce an acoustic output – something that the ferrofluid of Steere also does not do.

No such recited structure of attaching the a coupler to a transducer and an acoustic radiator is taught or suggested by the cited references individually or in combination; such a teaching or suggestion is required to establish *prima facie* obviousness. See MPEP § 2143.03. Likewise, Steere's ferrofluid does not meet the recital of Applicants' claims for substantial rigidity in the presence of an energy field or the characteristic of exciting bending waves, and the ferrofluid cannot be modified to be like Applicant's rheological material without impermissibly changing the principle of operation of Steere. See MPEP § 2143.01(VI). Accordingly, there is no *prima facie* obviousness, and Applicants' claims 28 and 29 are nonobvious over Steere in view of Murray.

Claims 7, 9, 13-17, 20, 24-25, and 39 are rejected under 35 USC § 103(a) as being unpatentable over Steere. These claims are allowable for the reasons set forth below.

For at least similar reasons to those regarding claims 1, 28, and 29, independent claim 20 is nonobvious over Steere, *e.g.*, (1) claim 20 recites *attaching* the coupler to the acoustic radiator and to the transducer, and (2) claim 20 recites that energy passes from the transducer through the coupler to the acoustic radiator. As discussed above, neither cited reference discloses this, and nor is it possible with the disclosures of either to do so. No such structure or function is taught or suggested in Steere, and therefore there is no *prima facie* case of obviousness.


The remaining rejected claims, all dependent, depend either directly or indirectly from allowable independent claims (claims 2-3, 6-9, and 11-18 from claim 1; claims 21-26 from claim 20; claims 30-33 from claim 29). Because of such dependencies, these claims contain all of the features of their respective base independent claim. Therefore, all dependent claims are submitted to be patentably distinguishable over the cited references. Furthermore, such claims recite unique combinations of elements not disclosed or suggested by the cited references.

For the foregoing reasons, Applicants respectfully submit that the invention claimed in the present application is not fairly taught or suggested by any of the references cited by the Examiner, either alone or in any reasonable combination. Reconsideration and withdrawal of the rejections, and allowance of all pending claims at an early date are respectfully requested. If the Examiner has any questions about the present amendment, a telephone interview is requested.

Respectfully submitted,

Matthew J. Murray  
(Applicant)

Date: 21 December 2007

By:   
Matthew W. Witsil  
Registration No. 47,183  
Moore & Van Allen PLLC  
430 Davis Drive, Suite 500  
P.O. Box 13706  
Research Triangle Park, NC 27709  
Telephone: (919) 286-8000  
Facsimile: (919) 286-8199